Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14EE2005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DC MACHINES AND TRANFORMERS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain how commutator-brush combination serves as rectifier in a DC generator. | CO1 | 10 |
| b. | Derive the EMF equation from the fundamentals and explain why lap winding is preferred for low voltage high current machines. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Obtain the no load and load characteristics of DC generator. | CO1 | 20 |
|  |  |  |  |  |
| 3. | a. | Why the compensating windings are used on certain DC machines? Explain their action and the method of connecting up these windings. Also give the instances where their use is desirable. | CO1 | 10 |
|  | b. | A 4-pole DC shunt generator with lap connected armature supplies 2.4 kW at 120 V. the armature and field copper lossed are 69W and 200W respectively. Calculate the armature current and generated EMF. | CO1 | 10 |
| (OR) | | | | |
| 4. |  | Compare mechanical characteristics of different DC motors and hence enumerate the field of application of each of them | CO3 | 20 |
|  |  |  |  |  |
| 5. |  | What are the factors controlling the motor speed? Discus the various speed control methods used for DC series motors. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Explain the retardation test conducted on a DC machine .Discuss the results conducted from the test. | CO3 | 20 |
|  |  |  |  |  |
| 7. |  | Define all day efficiency of a transformer. State how all day efficiency can be improved. | CO3 | 20 |
| (OR) | | | | |
| 8. |  | Derive the approximate equivalent circuit from OCC and SCC of a transformer | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Draw and explain the operation of single phase auto transformer and brief on savings of copper. | CO2 | 20 |

ALL THE BEST